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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/664,458

09/18/2003

Shunpei Yamazaki

0553-0379

4357

7590

12/07/2005

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EXAMINER

RAABE, CHRISTOPHER M

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 12/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/664,458	<b>Applicant(s)</b> YAMAZAKI ET AL.	
	<b>Examiner</b> Christopher M. Raabe	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) 16-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

1. Amendment filed September 15, 2005 has been entered and acknowledged by the examiner.

### *Response to Arguments*

2. Applicant's arguments filed September 15, 2005 have been fully considered but they are not persuasive.

With regard to applicant's argument that Koyama (USPN 2001/0002703) does not disclose an anode in contact with a first passivation film, nor a cathode in contact with a second passivation film, the examiner respectfully disagrees. Koyama does disclose an anode in contact with a first passivation layer (47,48 of fig 11) and a cathode in contact with a second passivation layer (43,41 of fig 11). The rejections of claims 1 and 2 are therefore maintained.

Due to the allowability of claims 3-15 depending upon the allowability of claim 1 or 2, in light of the maintaining of the rejections of claims 1 and 2 noted above, the rejections of the depending claims are maintained.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1,9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (U.S. Pre-grant Publication 2001/0002703, in view of Himeshima et al. (Japanese Patent 09-235546).

With regard to claim 1,

Koyama discloses a light-emitting device comprising: a first passivation film (paragraph 242) and a second passivation film (paragraph 234); and a light-emitting element formed between the first passivation film and the second passivation film (paragraph 241), wherein the light-emitting element comprises an anode, a cathode and a light-emitting layer between the anode and the cathode (paragraph 241); wherein the light-emitting layer comprises a dopant (paragraph 8), wherein the anode is in contact with the first passivation film (48,47 of fig 11); wherein the cathode is in contact with the second passivation film (41, 43 of fig 11).

Koyama does not disclose the dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less.

Himeshima et al. do disclose a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less (paragraph 19, and embodiment 6).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the concentration disclosed in Himeshima et al. into the device of Koyama in order to avoid a concentration quenching effect (paragraph 19 of Himeshima et al.).

5. Claims 2,9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata (U.S. Pre-grant Publication 2002/0070385), in view of Koyama (as above) and Himeshima et al. (as above).

With regard to claim 2,

Yamagata discloses a light-emitting device comprising: a photosensitive organic resin film having an opening (paragraph 97, and 939 of figs 9); and a light-emitting element having an anode, a cathode and a light-emitting layer between the anode and the cathode (paragraph 6); wherein the anode, the cathode and the light-emitting layer are overlapped in an opening in the photosensitive organic resin layer (fig 9c).

Yamagata does not disclose a first passivation film and a second passivation film; wherein an anode and a resin film are formed on the first passivation film; wherein the resin film and the cathode are covered with the second passivation film; nor a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less.

Koyama does disclose a first passivation film (paragraph 321) and a second passivation film (paragraph 331); wherein an anode and a resin film are formed on the first passivation film (paragraphs 323,324); wherein the resin film and the cathode are covered with the second passivation film (paragraph 331 and fig. 16c), wherein the anode is in contact with the first passivation film and the cathode is in contact with the second passivation film (fig 16c).

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Himeshima et al. do disclose a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less (paragraph 19, and embodiment 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the dopant concentration, as disclosed by Himeshima et al., and the combination of first and second passivation films, as disclosed by Koyama, into the device of Yamagata in order to avoid a concentration quenching effect (paragraph 19 of Himeshima et al.), relieve spacer pressure and protect the light-emitting element (paragraphs 223 and 242).

With regard to claim 9,

Koyama or Yamagata discloses a light-emitting device.

Neither Koyama nor Yamagata explicitly disclose the light-emitting element, after turning on for 100 hr with an initial intrinsic brightness set at 320 cd/mm<sup>2</sup> and a duty ratio set at 70%, having a diminishing amount of the intrinsic brightness of substantially 10% or less of the initial intrinsic brightness.

However, the light-emitting element, after turning on for 100 hr with an initial intrinsic brightness set at 320 cd/mm<sup>2</sup> and a duty ratio set at 70%, having a diminishing amount of the intrinsic brightness of substantially 10% or less of the initial intrinsic brightness is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, and is therefore not given patentable weight.

With regard to claim 10,

Koyama or Yamagata discloses a light-emitting device.

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Neither Koyama nor Yamagata explicitly disclose the light-emitting element, after turning on for 1000 hr with an initial intrinsic brightness set at  $320 \text{ cd/mm}^2$  and a duty ratio set at 70%, has a diminishing amount of the intrinsic brightness of substantially 20% or less of the initial intrinsic brightness.

However, the light-emitting element, after turning on for 1000 hr with an initial intrinsic brightness set at  $320 \text{ cd/mm}^2$  and a duty ratio set at 70%, having a diminishing amount of the intrinsic brightness of substantially 20% or less of the initial intrinsic brightness is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, and is therefore not given patentable weight.

With regard to claim 11,

Koyama or Yamagata disclose a light-emitting device, wherein the light-emitting device includes a transistor that controls a current that is supplied to the light-emitting element (paragraph 4 of Koyama, or paragraph 17 of Yamagata), wherein both the light-emitting element and the transistor are plurally disposed in a pixel portion of the light-emitting device (fig 2 of Koyama, and fig 5 of Yamagata), wherein the pixel portion is disposed on a substrate (paragraph 2 of Koyama, or paragraph 2 of Yamagata).

Neither Koyama nor Yamagata explicitly disclose the light-emitting element wherein when brightness is set at 200 nt when a duty ratio is set at 70%, a temperature of a portion that overlaps with the pixel portion of the substrate is 40 degree centigrade or less.

However, a temperature of a portion that overlaps with the pixel portion of the substrate being 40 degree centigrade or less when brightness of the light-emitting element is set at 200 nt when a duty ratio is set at 70% is a property of the light-emitting device, does not structurally

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differentiate the light-emitting device from the prior art, and is therefore not given patentable weight.

With regard to claim 12,

Koyama or Yamagata disclose a light-emitting device, wherein the light-emitting device includes a transistor that controls a current that is supplied to the light-emitting element (paragraph 4 of Koyama, or paragraph 17 of Yamagata), wherein both the light-emitting element and the transistor are plurally disposed in a pixel portion of the light-emitting device (fig 2 of Koyama, and fig 5 of Yamagata), wherein the pixel portion is disposed on a substrate (paragraph 2 of Koyama, or paragraph 2 of Yamagata).

Neither Koyama nor Yamagata disclose a temperature of a portion that overlaps with the pixel portion of the substrate being 40 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 600 mW when a duty ratio is set at 70%.

However, a temperature of a portion that overlaps with the pixel portion of the substrate being 40 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 600 mW when a duty ratio is set at 70% is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, and is therefore not given patentable weight.

With regard to claim 13,

Koyama or Yamagata disclose a light-emitting device, wherein the light-emitting device includes a transistor that controls a current that is supplied to the light-emitting element; both the light-emitting element and the transistor are plurally disposed in a pixel portion of the light-emitting device; and the pixel portion is disposed on a substrate (paragraphs 4 and 5).



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The phrase "wherein when brightness of the light-emitting element is set at 130 nt when a duty ratio is set at 70%, a temperature of a portion that overlaps with the pixel portion of the substrate is 35 degree centigrade or less" does not structurally distinguish the claimed invention from the prior art, as is required of apparatus claims.

With regard to claim 14,

Koyama or Yamagata disclose a light-emitting device, wherein the light-emitting device includes a transistor that controls a current that is supplied to the light-emitting element (paragraph 4 of Koyama, or paragraph 17 of Yamagata), wherein both the light-emitting element and the transistor are plurally disposed in a pixel portion of the light-emitting device (fig 2 of Koyama, and fig 5 of Yamagata), wherein the pixel portion is disposed on a substrate (paragraph 2 of Koyama, or paragraph 2 of Yamagata).

Neither Koyama nor Yamagata disclose a temperature of a portion that overlaps with the pixel portion of the substrate being 35 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 400 mW when a duty ratio is set at 70%.

However, a temperature of a portion that overlaps with the pixel portion of the substrate being 35 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 400 mW when a duty ratio is set at 70% is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, and is therefore not given patentable weight.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama and Himeshima et al. as applied to claim 2 above, and further in view of Yamazaki et al. (U.S. Pre-grant Publication 2002/0074936).

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With regard to claim 3

Yamagata discloses a light-emitting device and a photosensitive organic resin (insulating) film, having an opening.

Yamagata does not disclose a radius of curvature of a curve that a section in the opening of the insulating (photosensitive organic resin) film depicts being in the range of from 0.2 to 2  $\mu\text{m}$ .

Yamazaki et al. do disclose a radius of curvature of a curve that a section in the opening of the insulating film depicts being in the range of from 0.2 to 2  $\mu\text{m}$  (paragraph 31).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama and Himeshima et al. as applied to claim 2 above, and further in view of Yamazaki et al. (U.S. Patent 6359320).

With regard to claim 4,

Yamagata discloses a light-emitting device.

Yamagata does not disclose a light-emitting device wherein the photosensitive organic resin film has positive photosensitivity.

Yamazaki et al. do disclose a light-emitting device wherein the photosensitive organic resin film has positive photosensitivity.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the photosensitivity range disclosed in Yamazaki et al. into the device of Yamagata to allow small changes in the conductivity of the organic resin film.

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8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama, and Himeshima et al. as applied to claim 2 above, and further in view of Tamai et al. (U.S. Patent 5793497).

With regard to claim 5,

Yamagata discloses a light-emitting device.

Yamagata does not disclose a light-emitting device wherein the photosensitive organic resin film has negative photosensitivity.

Tamai et al. do disclose a photosensitive organic resin film having negative photosensitivity (column 3, line 64 – column 4, line 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the photosensitivity range disclosed in Tamai et al. into the device of Yamagata in order to lower the conductivity of the organic resin film.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama and Himeshima et al., or Yamagata, Koyama and Himeshima et al. as applied to claim 1 or 2 above, respectively, and further in view of *Producing Monolithic Light Emitting Diode Display Chips* (IBM Technical Disclosure Bulletin Vol. 16, Issue 1, Pg. 6, 6/1/1973).

With regard to claim 6,

Koyama discloses a light-emitting device, wherein at least one of the first passivation film and the second passivation film is a carbon nitride film or a silicon nitride film (paragraph 242),

Koyama does not disclose forming a passivation film by an RF sputtering process.

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Forming a passivation film by an RF sputtering process is disclosed in *Producing Monolithic Light Emitting Diode Display Chips*.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the RF sputtering process into the device of Koyama or Yamagata, in order to efficiently deposit the film.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama and Himeshima et al., or Yamagata, Koyama and Himeshima et al. as applied to claim 1 or 2 above, respectively, and further in view of Jones et al. (U.S. Patent 6069443).

With regard to claim 7,

Koyama or Yamagata discloses the light-emitting device.

Neither Koyama nor Yamagata discloses a passivation film comprising a material selected from the group consisting of DLC, boron nitride and alumina.

Jones et al. do disclose a passivation film comprising a material selected from the group consisting of DLC, boron nitride and alumina (column 8, lines 34-40).

It would have been obvious to incorporate the material of Jones et al. into the device of either Koyama or Yamagata in order to provide good resistance to wear, electrical insulation and thermal conductivity.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama and Himeshima et al., or Yamagata, Koyama and Himeshima et al. as applied to claim 1 or 2 above, respectively, and further in view of Admission (Applicant's Admitted Prior Art).

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With regard to claim 8,

Koyama or Yamagata discloses a light-emitting device, wherein the light-emitting device includes a transistor that controls a current that is supplied to the light-emitting element (paragraph 4 of Koyama, or paragraph 17 of Yamagata).

Neither Koyama nor Yamagata discloses a transistor being operated in a saturation region.

Admission does disclose a transistor being operated in a saturation region (page 2, lines 3-6).

It would have been obvious to one of ordinary skill in the art to incorporate the operation disclosed in Admission into the device of Koyama or Yamagata in order to prevent the decline of luminance (page 2, lines 3-6 of Admission).

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama and Himeshima et al., or Yamagata, Koyama, and Himeshima et al. as applied to claim 1 or 2 above, and further in view of Tamano et al. (U.S. Patent 5968675).

With regard to claim 15,

Koyama or Yamagata discloses a light-emitting device.

Neither Koyama nor Yamagata discloses the light-emitting layer comprising a quinacridone derivative.

Tamano et al. do disclose a light-emitting layer comprising a quinacridone derivative (column 25, line 59 – column 26, line 7).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the substance disclosed by Tamano et al. into the device of Koyama or Yamagata in order to provide good heat, light and migration fastness, and good weathering.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Raabe whose telephone number is 571-272-8434. The examiner can normally be reached on m-f 7am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR

*Ashe*  
ACKNOWLEDGEMENT  
PATENT EXAMINER